REMARKS

Claim 1 has been amended to recite that the conductive film is discontinuous, as noted on page 15. This is a necessary consequence of the fact that the independent conductive particles in the conductive film are coarsely distributed, and therefore does not represent a change in scope.

It is respectfully submitted that the claims were not and are not anticipated by Kabushiki and the rejection of claims 1-6 and 9-12 under 35 U.S.C. 102 should not be repeated.

Kabushiki relates to a three dimensional structure which is a porous body having a plurality of regions loaded with a substance to thereby form a photonic band. The loaded material acts as the indispensable steric wiring [0005]. To function as a wiring, the regions must be continuous.

The reference describes making a porous body and then providing a different material in the porous portion by, for example, a plating treatment. If the inner surface of the pore has been chemically modified, a metal or metal oxide can precipitate and grow about the chemically modified portion acting as a catalyst to promote growth. Depending on where the precipitation starts, the precipitated metal can close the pore to inhibit precipitation deep inside the porous body or permit the precipitation to be started from a region deep inside the body [0080]. For example, if a polymer surface is wet with an aqueous solution of copper sulfate and irradiated with a laser, copper atoms are taken into the surface of the polymer and act as a nucleus to permit copper to be selectively precipitated onto the irradiated portion by the electroless plating thereby, forming a three

dimensional wiring structure made of copper within the polymeric porous body [0082]. This reference thus discloses forming a continuous conductive film in the pores.

It should be appreciated that electroless plating is normally conducted to form a continuous film but it can also be intentionally controlled to form a discontinuous film. A teaching of electroless plating cannot, without more, be assumed to realize a discontinuous condition.

The coarse distribution is a significant feature of the invention for the reasons set forth page 13 at et seq. It can be obtained by controlling the plating parameters of an electroless plating procedure. At a lower plating times, the individual plural protrusions in the form of particles or clusters formed are not connected to each other and therefore exist as being coarsely distributed. The result is that the conductive particles are in the state of a discontinuous metal film which prevents current from being conducted along a relatively long path and provides an advantage equivalent to the case where a metal is coated with an insulation film. Attenuation, band width and band gap increase by forming the conductive film on the unit cell, the frequency at which the band gap appears is decreased and the apparent dielectric constant of the unit cell becomes high. This is equivalent to providing a photonic crystal with a high dielectric constant material. When the plating time is too long, the conductive particles are distributed sequentially and form a continuous film through which current is freely conducted, causing the structure of the two substances having different dielectric constants periodically distributed in the three dimensional space to have no effect, whereby the band gap disappears.

There is no teaching or suggestion in Kabushiki of a conductive film having independent conductive particles or cluster of a plurality of conductive particles coarsely

distributed (thereby forming a discontinuous file) at any interface between the pores and the polymeric structure. An anticipation rejection, therefore, is not tenable. The reference provides no reason that one skilled in the art would ever desire to form a conductive film having independent conductive particles or clusters coarsely distributed at an interface between substances, and therefore, the reference also fails to render the claimed invention obvious.

Claims 1-5, 7-9, 11 and 13 should not be rejected under 35 U.S.C. 102 over Zakhidov.

This reference relates to a templating process in which one three dimensional structure is used as a negative to form another three dimensional structure. The Examiner's attention is respectfully invited to the Zakhidov article previously submitted which shows in Figure 1 that templating by electrodeposition or infiltration results in a continuous structure.

In the described method, a first material A is formed into spheres having three dimensional periodicity with voids between the spheres, the resulting structure is treated to form necks between spheres of material A, a material B is then infiltrated into the spherical structure and finally, material A is removed from the composite structure. The nature of infiltrated material B is not restricted. Also, a number of different infiltrating processes can be used. It can be a surface templating process where a coating layer is formed on the interior surface of the spheres. Alternatively, a volume templating process in which the void volume of the spheres is completely filled can be employed. See, e.g., column 11, lines 64-67. Neither of these processes results in the coarse distribution of the instant invention.

Other templating processes are available. Two of these are patch templating and particle loading. Patch templating is a process in which the surfaces of a void structure are covered with a surface coating of infiltrated material so that no uncoated regions exist (column 12, lines 62-65). The use of gold (to which the Office Action refers) is described in connection with the patch coating process at column 13, lines 1-4. This process also does not result in the coarse distribution of the present invention. In particle loading, particles are infiltrated and aggregated together to form a mechanically robust structure which will not de-aggregate and be lost when the host material A is extracted. Given the fact that the material B is taking the place of the voids in material A, it will be appreciated that once again, a continuous film is being prepared, albeit by an aggregation process.

There is nothing in this reference which suggests that conditions be controlled to realize a discontinuous layer.

In none of the templating processes described is a conductive film having independent conductive particles or clusters of a plurality of conductive particles coarsely distributed therein formed. To the extent there may be conductive particles or clusters, they are continuously distributed so as to form a uniform conductive film. Accordingly, the structure made by Zakhidov is different from that claimed in the present case and an anticipation rejection is not appropriate. Further, Zakhidov provides no reason for forming a conductive film having particles or clusters coarsely distributed at an interface between substances having different dielectric constants periodically distributed in a three dimensional space, and therefore, no rejection is based on obviousness is appropriate.

The early further consideration and allowance of this application is respectfully requested..

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Respectfully submitted,

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